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PO/SCT	**Submittal**	**Rev**

Job No. 24590

Bechtel National, Inc.

SUPPLIER DOCUMENT STATUS

1. [X] **Work may proceed.**
2. [ ] **Revise and resubmit. Work may proceed subject to resolution of indicated comments.**
3. [ ] **Revise and resubmit. Work may not proceed.**
4. [ ] **Review not required. Work may proceed.**

Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods, or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.

REVIEWED

G-321 Document Category N/A
[From Supplement A to G-321-E (E) or G-321-V (V), as applicable, or "N/A" if SSRS is used]

Supersedes BNI Document No. N/A Rev. _____
[When applicable]

Accepted by DC Pflueger _____ 11/8/04
Print Name / Signature / Date

Released by N/A _____ _____
[When applicable] Print Name / Signature / Date

TP0406_34 7-04

SUBCONTRACT SUBMITTAL

IQRPE REVIEW
OF
THE HIGH-LEVEL WASTE FACILITY PULSE JET VENTILATION SYSTEM
MISCELLANEOUS TREATMENT UNITS (MTUs):
PJV HEPA FILTERS (PJV-HEPA-00004A/B & -00005A/B)
AND PJV HEPA FILTER PREHEATER (PJV-HTR-00002)

"I, Tarlok S. Hundal, have reviewed and certified a portion of the design of a new tank system or component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design for the Miscellaneous Treatment Units: PJV HEPA Filters (PJV-HEPA-00004A/B & 00005A/B) and PJV HEPA Filter Preheater (PJV-HTR-00002) as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) applicable paragraphs, i.e., (a) through (g)."

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

The documentation reviewed indicates that the design intent fully satisfies the requirements of the WAC.

The attached review is thirteen (13) pages numbered one (1) through thirteen (13).

EXPIRES: 02/15/06

Signature

11-09-04
Date

74590-CM-HC4-HXYG-00138-02-00049 REV 00A

STRUCTURAL INTEGRITY ASSESSMENT OF THE HIGH-LEVEL WASTE FACILITY PULSE JET VENTILATION SYSTEM MISCELLANEOUS TREATMENT UNITS (MTUs): PJV HEPA FILTERS (PJV-HEPA-00004A/B & -00005A/B) AND PJV HEPA FILTER PREHEATER (PJV-HTR-00002)

COGEMA-IA-075
REV. 0

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

Scope	Scope of this Integrity Assessment	This Integrity Assessment addresses the Miscellaneous Treatment Units (MTUs) that are components of the HLW Facility Pulse Jet Ventilation System (PJV). These MTUs are: 1. Four PJV System HEPA Filters (PJV-HEPA-00004A/B & -00005A/B) - pages 3 thru 8. 2. One PJV System HEPA Filter Preheater (PJV-HTR-00002) - pages 9 thru 13.
References	Data Sheets, Mechanical Data Sheet, and System Description	Data Sheets: 24590-HLW-MAD-PJV-00004, Rev. 4, Remote-Change HEPA Filter Housing Data Sheet (PJV-HEPA-00004A); 24590-HLW-MAD-PJV-00005, Rev. 4, Remote-Change HEPA Filter Housing Data Sheet (PJV-HEPA-00005A); 24590-HLW-MAD-PJV-00006, Rev. 4, Remote-Change HEPA Filter Housing Data Sheet (PJV-HEPA-00004B); 24590-HLW-MAD-PJV-00007, Rev. 4, Remote-Change HEPA Filter Housing Data Sheet (PJV-HEPA-00005B). Mechanical Data Sheet: 24590-HLW-MED-PJV-00002, Rev. 0, Pulse Ventilation HEPA Electric Preheater (PJV-HTR-00002). System Description: 24590-HLW-3YD-PJV-00001, Rev. 0, System Description for the HLW Pulse Jet Ventilation System (PJV), including System Description Change Notice (SDCN) SDCN Nos. 24590-HLW-3YN-PJV-00001 & -00002.
Summary of Assessment		For each item of "Information Assessed" (i.e., Criteria) on the following pages, the items listed under "Source of Information" were reviewed and found to furnish adequate design controls and requirements to ensure the design intent fully satisfies the requirements of Washington Administrative Code, WAC-173-303-640, *Dangerous Waste Regulations* for Tank Systems.

References	Material Requisitions, Specifications, and Drawings.	Material Requisitions (MRs): 24590-QL-MRA-MKH0-00002, Rev. 1, Remote Change HEPA Filter Housings QL-1 (U6L3), MR Section 2 – Technical Specifications (Rev. 2, November 26,2002) including Supplement –S0001; 24590-QL-MRA-MEE0-00001, Rev. 1, Heaters, Electric (Offgas Heaters) (MS071) (N075), MR Section 2 – Technical Specifications (Rev. 5, August 19, 2003) including Supplement –S0001. The following Specifications with their appropriate number and revision (including specification change notices) are included in the above listed Material Requisitions: Engineering Specification for Pressure Vessel Design and Fabrication; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; General Specification for Supplier Quality Assurance Program Requirements; Engineering Specification for Positive Material Identification (PMI); General Specification for Packaging, Shipping, Handling, and Storage Requirements; Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks; Engineering Specification for Structural Design Loads for Seismic Category III/IV Equipment and Tanks; Engineering Specification for Hot and Anti-Sweat Thermal Insulation; Engineering Specification for HEPA Filter Preheaters; Engineering Specification for HEPA Filters; Engineering Specification for Remote Change HEPA Filter Housings. Drawings: 24590-HLW-P1-P01T-P0002, Rev. 3, HLW Vitrification Building general Arrangement (Permit) Plan at El. 0'-0"; 24590-HLW-P1-P01T-P0008, Rev. 7, HLW Vitrification Building general Arrangement (Permit) Sections A-A, B-B, and C-C; 24590-HLW-M5-V17T-P0005, Rev. 0, Process Flow Diagram HLW Vitrification Pulse Jet Ventilation Treatment (PJV); 24590-HLW-M6-PJV-P0001, Rev. 0, P&ID – HLW Pulse Jet Ventilation System Collection & Conditioning; 24590-HLW-M6-PJV-P0002, Rev. 0, P&ID – HLW Pulse Jet Ventilation System Filtration & Monitoring.

	Information Assessed	Source of Information	Assessment
Design	Plant item design standards are appropriate and adequate for the plant item's intended use.	Specifications, Drawings, System Description, and Data Sheets listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The HLW Pulse Vent HEPA Filters are components in the HLW Facility Pulse Jet Ventilation System (PJV). The HLW Pulse Vent HEPA Filters are located in room H-0104 at Elevation 0'-0" as shown on the drawings and as noted on the data sheets. They are accessible for maintenance. The Engineering Specifications for Remote Change HEPA Filter Housings require that these HEPA Filters be designed, fabricated, and tested in accordance with the requirements in ASME AG-1-1997 and ASME AG-1a-2000. Supplementary requirements are specified in both of the Engineering Specifications. The supplementary requirements address design, materials, fabrication, inspection, testing, quality assurance, documentation, and storage requirements. The HEPA Filters are identified as Quality Level QL-1 and Seismic Category SC-I on the data sheets. These are adequate and acceptable design standards for the HLW Pulse Vent HEPA Filters.
	If a non-standard plant item is to be used, the design calculations demonstrate sound engineering principles of construction.	Specifications, Drawings, and Data Sheets listed above under References.	The HLW Pulse Vent HEPA Filters are components in the HLW Facility Pulse Jet Ventilation System (PJV). These HEPA Filters are standard offgas treatment assemblies that are shop fabricated. Engineering Specifications require that the ASME AG-1/1a HEPA Filter assemblies be delivered after design, fabrication, inspection, and testing. The HLW Pulse Vent HEPA Filters design codes and standards are appropriate and adequate for the intended service.

	Information Assessed	Source of Information	Assessment
Design	Plant item has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Specifications, Drawings, and Data Sheets listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The HLW Pulse Vent HEPA Filters data sheets identify the HEPA Filters operating pressure and temperature ranges, the materials selected for the HEPA Filters, the MTU quality levels, and the requirements for seismic design. The Engineering Specification for Remote Change HEPA Filter Housings requires the use of ASME AG-1/1a for design which provides for specific consideration of the operating pressures, temperatures, seismic loads and corrosion allowance in the design process. The data sheets indicate that the HEPA Filters operate in "dry" conditions (non-condensing); therefore, a corrosion resistant material is specified for the HEPA Filters, but no corrosion allowance is specified. Detailed requirements for seismic design of the HEPA Filters are furnished in the Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks. These codes and standards are adequate and appropriate for design of the HLW Pulse Vent HEPA Filters to withstand operating pressure and temperature loads and seismic loads for the specified design life while considering corrosion resistance.
Foundation	Plant item foundation will maintain the load of a full vessel.	Specifications listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The Engineering Specification for Remote Change HEPA Filter Housings requires that these HEPA Filters be designed, fabricated, and tested in accordance with the requirements in ASME AG-1/1a. These ASME codes and associated standards have adequate provisions to assure proper design of the HLW Pulse Vent HEPA Filters supports. The HEPA Filters are furnished as package units on skid platforms for installation in the HLW Vitrification Building.

Information Assessed		Source of Information	Assessment
Foundation	If in an area subject to flooding, the plant item is anchored.	Specifications, Drawings, Data Sheets, and System Description listed above under References.	The HLW Pulse Vent HEPA Filters are components in the HLW Facility Pulse Jet Ventilation System (PJV). This system handles offgas vapors and aerosols from the process vessels pulse jet (fluidics) mixing equipment. The HEPA Filters are located in filter cave H-0104 as shown on the data sheets. This process area contains only components of the HLW facility offgas systems; therefore, there are no local sources of liquids to flood the room and there is no firewater sprinkler system in Filter Cave H-0104. Design for flooding is not a required load case in the Engineering Specification for Remote Change HEPA Filter Housings. The HEPA Filters are anchored to provide for adequate seismic resistance.
Frost Heave	Plant item system will withstand the effects of frost heave.	System Description listed above under References; 24590-WTP-DC-ST-01-001, Rev. 3, Structural Design Criteria.	The Structural Design Criteria requires that all structural foundations extend a distance below grade that exceeds the depth of the frost line in order to preclude frost heave. The frost line is 30 in. below grade. The HLW Vitrification Building mat foundation is not subject to frost heave, therefore, the HLW Pulse Vent HEPA Filters, located inside the HLW Vitrification Building, are not subject to frost heave.

Information Assessed		Source of Information	Assessment
Waste Characteristics	Characteristics of the waste to be stored or treated have been identified (ignitable, reactive, toxic, specific gravity, vapor pressure, flash point, storage temperature)	Material Requisitions, Data Sheets, and System Description listed above under References; 24590-WTP-PER-PR-03-002, Rev. 1, Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems; 24590-WTP-PER-PR-03-001, Rev. 1, Prevention of Hydrogen Accumulation in WTP Tank Systems And Miscellaneous Treatment Unit Systems; 24590-WTP-SED-ENS-03-002-04, Rev. 0e, Safety Envelope Document; HLW Facility Specific Information.	The HLW Pulse Vent HEPA Filters material requisitions and data sheets list the offgas specific gravity, operating temperatures and pressures, and the chemical composition of hazardous materials in the offgas for design inputs. The main safety function of the HEPA Filters is to provide protection for the public, co-located workers and facility workers from the acutely or chronically toxic vapors and emissions during normal and abnormal operations. This is discussed in the Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems document. The Prevention of Hydrogen Accumulation in WTP Tank Systems And Miscellaneous Treatment Unit Systems document describes that the MTUs in the HLW facility are not expected to generate hydrogen gas. The HEPA Filters function during normal and abnormal operations to maintain flow of the offgas to the HLW Building Stack. The HLW Pulse Vent MTUs and the associated ductwork perform a safety function to provide an intact housing pressure boundary during normal operations, abnormal operations and during and after a Design Basis Earthquake (DBE) as discussed in the Safety Envelope Document. This function assures operation of the Pulse Jet Mixers for hydrogen control in HLW Facility process vessels after a DBE.
	Plant item is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Data Sheets and System Description listed above under References.	The HLW Pulse Vent HEPA Filters data sheets identify that the HEPA Filters provide filtration and pressure head to maintain normal offgas flow. The System Description discusses normal and abnormal operations for the HEPA Filters. Additional reagents will not normally be added to the PJV System offgas streams during normal and abnormal operations.

Information Assessed		Source of Information	Assessment
Compatibility	The waste types are compatible with each other.	Data Sheets and System Description listed above under References.	The System Description for the HLW Pulse Jet Ventilation System (PJV) does not describe any operations where incompatible wastes are mixed in the PJV System offgas streams. The offgas chemistries for both normal and abnormal operations were fully considered in the material selections for the HEPA Filters as shown on the data sheets.
Corrosion	Plant item material and protective coatings ensure the vessel structure is adequately protected form the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system)	Drawings, Data Sheets, and System Description listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The HLW Pulse Vent HEPA Filters data sheets list 304L stainless steel as the preferred material the HEPA Filters pressure boundaries and internals. The data sheets indicate that the HEPA Filters operate in "dry" conditions (non-condensing); therefore, a corrosion resistant material is specified for the housings and internal components, but no corrosion allowance is specified. ASME AG-1/1a do require mandatory consideration of corrosion/erosion in the design of these MTUs. The external environment for the HEPA Filters will be dry air in room H-0104. Therefore, external corrosion is not a concern.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the plant item.	Specifications and Data Sheets listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The basis for the HLW Pulse Vent HEPA Filters material selections is furnished in the data sheets. Selection of 304L stainless steel for a service life of 40 years is adequate and appropriate considering that the HEP Filters operate in "dry" conditions (non-condensing). The Engineering Specification for Remote Change HEPA Filter Housings does not specify use of a corrosion allowance. However, the ASME AG-1/1a codes do require mandatory consideration of corrosion/erosion in the design of these HEPA Filters. The external environment for the HEPA Filters will be dry air in room H-0104. Therefore, external corrosion is not a concern.

	Information Assessed	Source of Information	Assessment
Pressure Relief	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the plant item are exceeded.	Specifications and Data Sheets listed above under References; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The HLW Pulse Vent HEPA Filters data sheets provide the design pressure and temperature conditions for the HEPA Filters. The Engineering Specification for Remote Change HEPA Filter Housings requires the HEPA pressure boundary to be designed for a minimum of 150% of the Maximum Operating Pressure while retaining adequate code based design and deformation margins. This requirement is correctly carried into the data sheets.

Information Assessed		Source of Information	Assessment
Design	Plant item design standards are appropriate and adequate for the plant item's intended use.	Material Requisition, Specifications, and Mechanical Data Sheets listed above under References; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment; American Society of Mechanical Engineers; 24590-WTP-3DP-G04T-00905, Rev. 3, Determination of Quality Levels. (BNI RPP-WTP, Engineering Department Project Instructions.)	The Engineering Specification for HEPA Filter Preheaters requires use of the Engineering Specification for Pressure Vessel Design and Fabrication for the external pressure boundary of the HLW HEPA Filter Preheater. This specification requires that the external pressure boundary is to be designed to ASME B&PV Code, Section VIII, Division 1 rules supplemented with elements of the ASME AG-1/1a codes. Additional supplementary requirements are specified in the specification for Pressure Vessel Design and Fabrication. These supplementary requirements address positive material identification, standard fabrication tolerances, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, quality assurance requirements, and packaging, shipping, handling and storage requirements. The Mechanical Data Sheet identifies the external pressure boundary of the HLW HEPA Filter Preheater as Quality Level (QL-1) and Seismic Category (SC-I). Quality Levels are explained in the Determination of Quality Levels and Seismic Categories are explained in the Engineering Specification for Pressure Vessel Design and Fabrication. These are adequate and acceptable codes and standards for design and fabrication of the HLW HEPA Filter Preheater.
	If a non-standard plant item is to be used, the design calculations demonstrate sound engineering principles of construction.	Specifications listed above under References; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers.	The Engineering Specification for HEPA Filter Preheaters requires that the HLW HEPA Filter Preheater is to be designed and fabricated in accordance with the requirements of ASME B&PV Code, Section VIII, Division 1 supplemented by ASME AG-1/1a. The preheater is to be delivered after design, fabrication, inspection and testing. A code stamp is not required for this MTU. This is a shop fabricated MTU for PJV System offgas service in the HLW Facility.

Information Assessed		Source of Information	Assessment
Design	Plant item has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Specifications and Mechanical Data Sheet listed above under References; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; ASME AG-1a-2000, Addenda to and ASME AG-1-1997, Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers.	The Engineering Specification for HEPA Filter Preheaters requires use of the Engineering Specification for Pressure Vessel Design and Fabrication for the external pressure boundary of the HLW HEPA Filter Preheater. This specification requires that the external pressure boundary is to be designed to ASME B&PV Code, Section VIII, Division 1 rules supplemented with elements of the ASME AG-1/1a codes. These codes require specific consideration of the operating pressures, temperatures, seismic loads, and corrosion allowance in the design process. The Mechanical Data Sheet identifies the operating pressure and temperature range for the HLW HEPA Filter Preheater, the materials selected for the process conditions, the corrosion allowance, and the requirements for seismic qualification in the design. The HLW HEPA Filter Preheater pressure boundary is Seismic Category SC-I. The Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks provides detailed guidance for seismic analysis of this MTU. These are adequate and appropriate codes and standards to ensure the HLW HEPA Filter Preheater has adequate strength at the end of its design life for all anticipated loading conditions.
Foundation	Plant item foundation will maintain the load of a full vessel.	Material Requisition, Specifications, and Mechanical Data Sheet listed above under References; ACI 349, Code Requirements for Nuclear Safety Related Concrete Structures (ACI 349-01)/and Commentary (ACI 349R-01), American Concrete Institute; AISC N690-1994, Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction.	The Engineering Specification for HEPA Filter Preheaters requires use of the Engineering Specification for Pressure Vessel Design and Fabrication which provides requirements that assure adequate equipment foundation designs. The Mechanical Data Sheet provides a sketch showing the envelope available for installation of the HLW HEPA Filter Preheater in the shield wall inside the HLW Facility. The Material Requisition includes the cast-in-place steel penetration frame for the concrete wall that supports the HEPA preheater. This frame is designed in accordance with the provisions of ACI 349 and AISC N690. These codes and standards and dimensional data are appropriate and adequate to assure that the foundation design is acceptable.

Information Assessed		Source of Information	Assessment
Foundation	If in an area subject to flooding, the plant item is anchored.	Specifications and Mechanical Data Sheet listed above under References.	The HLW HEPA Filter Preheater is to be installed in an exterior shield wall of filter cave H-0104 as shown in the sketch in the Mechanical Data Sheet. The equipment in filter cave H-0104 is comprised of remote handled HEPA filtration units for several offgas systems in the HLW Facility. There are no local sources of liquids to flood the filter cave room. Design for flooding is not a required load case in the Engineering Specification for HEPA Filter Preheaters. The preheater is anchored to provide for adequate seismic resistance.
Frost Heave	Plant item system will withstand the effects of frost heave.	System Description listed above under References; 24590-WTP-DC-ST-01-001, Rev. 3, Structural Design Criteria.	The HLW HEPA Filter Preheater is installed in an exterior shield wall of filter cave H-0104 in the HLW Vitrification Building. This room is supported by the HLW Building mat foundation. The Structural Design Criteria requires that all structural foundations extend into the surrounding soil below the frost line in order to preclude frost heave. The frost line is located 30 in. below finished grade. The HLW Building mat foundation is not subject to frost heave, therefore the HLW HEPA Filter Preheater will not be subject to frost heave.
Waste Characteristics	Characteristics of the waste to be stored or treated have been identified (ignitable, reactive, toxic, specific gravity, vapor pressure, flash point, storage temperature)	Mechanical Data Sheet and System Description listed above under References; 24590-WTP-PER-PR-03-002, Rev. 1, Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems.	The Mechanical Data Sheet lists the offgas operating temperatures and pressures, relative humidity and the radiological and chemical composition of hazardous materials in the offgas. The main safety functions of the HLW HEPA Filter Preheater are to provide confinement of the toxic vapors and aerosols in the PJV System offgas and to raise the offgas temperature above the dew point to protect the HEPA filters. These functions are discussed in the Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems document. The HLW HEPA Filter Preheater is also required to provide an intact external pressure boundary during normal operations, abnormal operations and during and after a Design Basis Earthquake as discussed in the System Description.

Information Assessed		Source of Information	Assessment
Waste Characteristics	Plant item is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Mechanical Data Sheet and System Description listed above under References.	The Mechanical Data Sheet shows that the material selection for the HLW HEPA Filter Preheater takes into account both normal and abnormal operations waste characteristics. The System Description discussions of normal and abnormal operations do not identify any reagents that would normally be added to the PJV system offgas stream.
Compatibility	The waste types are compatible with each other.	Mechanical Data Sheet and System Description listed above under References.	The System Description for the HLW Pulse Jet Ventilation System (PJV) does not describe any operations where incompatible wastes are mixed in the PJV offgas streams. The Mechanical Data Sheet shows that offgas chemistries for both normal and abnormal operations were fully considered in the material selections for the HLW HEPA Filter Preheater.

Information Assessed		Source of Information	Assessment
Corrosion	Plant item material and protective coatings ensure the vessel structure is adequately protected form the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system).	Specifications, Mechanical Data Sheet, and System Description listed above under References.	The Mechanical Data Sheet for the HLW HEPA Filter Preheater identifies 304 stainless steel (maximum 0.030% Carbon, dual certified), hereinafter called 304L stainless steel, as the material of choice for the external pressure boundary (housing). The pockets where the electric heating elements are installed are part of the external pressure boundary and they require additional corrosion resistance. Therefore, 316 stainless steel (maximum 0.030% Carbon, dual certified), hereinafter called 316L stainless steel, is specified for these pockets. The Engineering Specification for HEPA Filter Preheaters requires external insulation of the HLW HEPA Filter Preheater housing and connecting piping in accordance with the Engineering Specification for Hot and Anti-Sweat Thermal Insulation. The Specification for HEPA Filter Preheaters also requires that the maximum temperature of the concrete wall surface in contact with the Preheater not to be exceeded 100° F. These requirements assure that the HLW HEPA Filter Preheater will have adequate corrosion protection for the expected design life (40 years).
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the plant item.	Mechanical Data Sheet listed above under References	The Mechanical Data Sheet for the HLW HEPA Filter Preheater lists 304L stainless steel as the material selected for the external pressure boundary augmented by 316L stainless steel for the electrical heater pockets. A corrosion allowance of 0.040 in. is selected as adequate for a 40 year service life.
Pressure Relief	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the plant item are exceeded.	Mechanical Data Sheet listed above under References	The Mechanical Data Sheet for the HLW HEPA Filter Preheater lists a minimum design pressure of (-) 10 psig at 32° F and a maximum design pressure of (+) 25 psig at 212° F for the external pressure boundary. Normal operating pressure for the PJV offgas system is listed as about 13.7 psia. Therefore, the design has adequate margins.